



Cool and dry weather enhances the effects of air pollution on emergency IHD hospital admissions

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Abstract:

Background: Associations between ambient pollution and cardiovascular morbidity including ischemic heart disease (IHD) have been confirmed. Weather factors such as temperature, season and relative humidity (RH) may modify the effects of pollution. We conducted this study to examine the effects of air pollution on emergency IHD hospital admissions varied across seasons and RH levels, and to explore the possible joint modification of weather factors on pollution effects. **Methods:** Daily time series of air pollution concentrations, mean temperature and RH were collected from IHD hospital admissions from 1998 to 2007 in Hong Kong. We used generalized additive Poisson models with interaction term to estimate the pollution effects varied across seasons and RH levels, after adjusting for time trends, weather conditions, and influenza outbreaks. **Results:** An increase in the detrimental effects of air pollution in cool season and on low humidity days was observed. In the cool and dry season, a 10 µg/m³ increment of lag03 exposure was associated with an increase of emergency IHD admissions by 1.82% (95% CI: 1.24-2.40%), 3.89% (95% CI: 3.08-4.70%), and 2.19% (95% CI: 1.33-3.06%) for particles with an aerodynamic diameter less than 10 µm (PM₁₀), nitrogen dioxide (NO₂), and ozone (O₃), respectively. The effects of pollutants decreased greatly and lost statistical significance in the warm and humid season. **Conclusions:** We found season and RH jointly modified the associations between ambient pollution and IHD admissions, resulting in increased IHD admissions in the cool and dry season and reduced admissions in the warm and humid season.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Meteorological Factors

Air Pollution: Interaction with Temperature, Ozone, Particulate Matter, Other Air Pollution

Air Pollution (other): NO₂

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal, Urban



Climate Change and Human Health Literature Portal

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Impact:

specification of health effect or disease related to climate change exposure

Cardiovascular Effect

Cardiovascular Effect: Other Cardiovascular Effect

Cardiovascular Disease (other): emergency ischemic heart disease hospital admissions

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified